

Claims

I Claim:

SUB A 27

1. A method for breaking the viscosity of polymer gelled aqueous fluids comprising adding an effective amount of at least one aminocarboxylic acid to directly break down the gel.
2. The method of claim 1 where the aminocarboxylic acid acts directly on the polymer and not any crosslinking ion, if present.
3. The method of claim 1 where the polymer gel is not crosslinked.
4. The method of claim 1 where the polymer is a polysaccharide.
5. The method of claim 1 where the aminocarboxylic acid is selected from the group consisting of ethylenediaminetetraacetic acid (EDTA), propylenediamine-tetraacetic acid (PDTA), hydroxyethylenediaminetetraacetic acid (HEDTA), nitrilotriacetic acid (NTA), ethylenediaminetriacetic acid (HEDTA), ethylenediaminediacetic acid (H₂EDDA), dihydrate ethylenediaminediacetic acid (2H₂O EDTA), salts of these acids, and mixtures thereof.
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6. The method of claim 1 where the aminocarboxylic acid is selected from the group consisting of the sodium salt, the potassium salt, and the ammonium salt of the acid.
7. The method of claim 1 where the method is conducted at a temperature between about 120° F (49°C) and about 280° F (138°C).

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8. The method of claim 1 where in adding the aminocarboxylic acid, the amount of aminocarboxylic acid added ranges from about 0.1 to about 30.0 pptg (from about 0.01 to about 3.4 kg/m³) based on the total volume of fluid.

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9. A method for breaking the viscosity of polymer gelled aqueous fluids comprising adding an effective amount of at least one aminocarboxylic acid to directly on the polymer and not any crosslinking ion, if present, to break down the gel, where the aminocarboxylic acid is selected from the group consisting of ethylenediaminetetraacetic acid (EDTA), propylenediaminetetraacetic acid (PDTA), hydroxyethylenediaminetetraacetic acid (HEDTA), nitrilotriacetic acid (NTA), ethylenediaminetriacetic acid (HEDTA), ethylenediaminediacetic acid (H₂EDDA), dihydrate ethylenediaminediacetic acid (2H₂O EDTA), salts of these acids, and mixtures thereof, and where the method is conducted at a temperature between about 120° F (49°C) and about 280° F (138°C).

10. The method of claim 9 where the polymer gel is not crosslinked.

11. The method of claim 9 where the polymer is a polysaccharide.

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12. The method of claim 9 where the aminocarboxylic acid is selected from the group consisting of the sodium salt, the potassium salt, and the ammonium salt of the acid.

13. The method of claim 9 where in adding the aminocarboxylic acid, the amount of aminocarboxylic acid added ranges from about 0.1 to about 30.0 pptg (from about 0.01 to about 3.4 kg/m³) based on the total volume of fluid.

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14. An aqueous fluid comprising water;

at least one polymer forming an aqueous gel; and
at least one aminocarboxylic acid in an amount effective to directly break
down the gel.

15. The fluid of claim 14 in the absence of a crosslinker.

16. The fluid of claim 14 where the polymer is a polysaccharide.

17. The fluid of claim 14 where the aminocarboxylic acid is selected from the group consisting of ethylenediaminetetraacetic acid (EDTA), propylenediaminetetraacetic acid (PDTA), hydroxyethylenediaminetetraacetic acid (HEDTA), nitrilotriacetic acid (NTA), ethylenediaminetriacetic acid (HEDTA), ethylenediaminediacetic acid (H₂EDDA), dihydrate ethylenediaminediacetic acid (2H₂O EDTA), salts of these acids, and mixtures thereof.

18. The fluid of claim 17 where the aminocarboxylic acid is selected from the sodium salt, the potassium salt, and the ammonium salt of the acid.

19. The fluid of claim 14 where in adding the aminocarboxylic acid, the amount of aminocarboxylic acid added ranges from about 0.1 to about 30.0 pptg (from about 0.01 to about 3.4 kg/m³) based on the total volume of fluid.

20. An aqueous fluid comprising
water;
at least one polymer forming an aqueous gel;
at least one aminocarboxylic acid in an amount effective to directly break
down the gel; and
the absence of a crosslinker.

where the aminocarboxylic acid is selected from the group consisting of ethylenediaminetetraacetic acid (EDTA), propylenediaminetetraacetic acid (PDTA), hydroxyethylenediaminetetraacetic acid (HEDTA), nitrilotriacetic acid (NTA), ethylenediaminetriacetic acid (HEDTA), ethylenediaminediacetic acid (H₂EDDA), dihydrate ethylenediaminediacetic acid (2H₂O EDTA), salts of these acids, and mixtures thereof.

R.2^v 20. The fluid of claim 20 where the polymer is a polysaccharide.

21. The fluid of claim 20 where the aminocarboxylic acid is selected from the sodium salt, the potassium salt, and the ammonium salt of the acid.

SUB B1 22. The fluid of claim 20 where in adding the aminocarboxylic acid, the amount of aminocarboxylic acid added ranges from about 0.1 to about 30.0 pptg (from about 0.01 to about 3.4 kg/m³) based on the total volume of fluid.